DOCUMENT RESUME

ED 349 219 SO 022 354

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TITLE The Professional Artist's Thinking Style: An In-Depth Study.
PUB DATE 92
NOTE 29p.; Paper presented at the Annual Meeting of the National Art Education Association (Phoenix, AZ, April 1992).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Art Education; Art Expression; *Artists; *Cognitive Style; Creativity; Educational Research; Intellectual Development; *Intelligence; Intelligence Differences; Interviews; *Learning Processes; Learning Theories; *Naturalistic Observation; Thinking Skills; *Visual Arts

ABSTRACT

Little has been researched about the professional artist's preferred style of thinking, his/her manner of acquiring and utilizing knowledge, and how it affects the learning process. This investigation used a revised method of naturalistic inquiry for the purpose of developing a research method that was responsive to the uniqueness of artistic concerns; one that was conscious of the idiosyncratic issues that affect mental development in regard to obtaining knowledge. The protocol of traditional interview reporting was expanded by addressing the peculiarity of the "self" in the collection of the data. For example, respondents' names were used in the reporting of the results, thus, crediting the comments made. Interviews were conducted with highly successful and well-known visual artists to determine their patterns of thinking and learning. An analysis of this observation, as a self-knowledge of self-report method, was used to determine what form artistic intelligence took and what common characteristics existed that comprised this particular group of learners. The intention was to develop some recognizable characteristics of artistic intelligence (criteria) that would enable the educational community to understand better this type of thinker in a learning situation. The assumption made in this project was the level of mental perception and awareness of an artist, based on the manipulation of figural structures, is a thinking style that creates specific behavioral characteristics not common to other populations. In turn, these characteristics influence the learning ability of such individuals in an educational setting and affect the development of growth in regard to obtaining knowledge. These assumptions were confirmed. Other findings indicated the need for the artistic individual to constantly feed the "self" to obtain the end-result of being creative and producing a product. The results also indicated that the artist felt different from others and created unique coping mechanism. (Author/DB)

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The Professional Artist's Thinking Style: An In-Depth Study

A Juried Research Paper Presented At The

National Art Education Association Convention

Phoenix, Arizona
1992

By

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The investigator would like to extend special appreciation to those artists who participated in this research project. They took valuable time out of their work schedules with the hope that the information gathered would benefit the educational field and teaching methodology.

The Professional Artist's Thinking Style: An In-Depth Study

Sharon D. La Pierre

Little has been researched about the professional artist's preferred style of thinking and his/her manner of acquiring and utilizing knowledge and how it affects the learning process. This investigation used a revised method of naturalistic inquiry for the purpose of developing a research method that was responsive to the uniqueness of artistic concerns; one that was conscious of the idiosyncratic issues that affect mental development in regard to obtaining knowledge. The protocol of traditional interview reporting was expanded by addressing the peculiarity of the "self" in the collection of the data. For example, respondents' names were used in the reporting of the results, thus, crediting the comments made.

Interviews were conducted with highly successful and well-known visual artists to determine their patterns of thinking and learning. An analysis of this observation, as a self-knowledge or self-report method, was used to determine what form artistic intelligence took and what common characteristics existed that comprised this particular group of learners. The intention was to develop some recognizable characteristics of artistic intelligence (criteria) that would enable the educational community to better understand this type of thinker in a learning situation.

The assumption made in this project was the level of mental perception and awareness of an artist, based on the manipulation of figural structures, is a thinking style that creates specific behavioral characteristics not common to other populations. In turn these characteristics influence the learning ability of such individuals in an educational setting and affect the development of growth in regard to obtaining knowledge. These assumptions were confirmed. Other findings indicated the need for the artistic individual to constantly feed the "self" to obtain the end-result of being creative and producing a product. The results also indicated that the artist felt different from others and created unique coping mechanisms.

Some of the research issues addressed in this project included the following:

- What was the unique manner of establishing problem solving systems and the processing of creative information for the artist?
- What role did formal education play in the development of thinking in this particular sample group?
- What system or structure of thinking did these thinkers use to understand and perform activities that related to learning?

The extent to which professional visual artists obtain knowledge, utilize the thinking process in order to be creative and innovative, and express particular traits as part of a thinking style has been discussed for decades. The art-maker has not always been seen in a positive manner. Rather, the artist has been portrayed by psychological research as being an atypical personality, oftentimes characterized as having negative and undesirable tendencies (La Chapelle, 1991). Yet, little research has been done to examine the thinking process utilized by the professional artist. According to La Chapelle (1991) "...studies of the art-making process utilized by professional artists outside of academia are so uncommon that they seem beyond the generally accepted purview of art education" (p.169). Consequently, many assumptions about educational settings, pedagogy, and thinking patterns are taken for granted about the artistic personality without the benefit of research to substantiate these claims. For example, the development of the intellect based on Guilford's

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Structure of the Intellect Model (SOI) has been suggested for adaptation in evaluating artistically spatial individuals (Arrance, 1990). It is assumed the specific cognitive functions that can be tested by the SOI method are representative of art thinking as well. These types of tests may or may not have the same theorectical constructs in terms of mental operations exhibited by the artistically spatial individual (La Pierre, 1987).

It is also assumed in education that collaborative learning and teaching methods enhance skills that process information and the creation of knowledge in the art student (Houser, 1991). This framework is based on the belief that socialization is a natural inclination of students, placing a premium "...on the process of art, while product is almost entirely de-emphasized" (p. 35). However, research by the psychologists Getzels and Csikzentmihalyi (as cited in La Chapelle, 1991) indicated that "...the image of the contemporary fine artist again emerged as a relatively socially withdrawn, highly introspective, unpredicable figure alienated from his/her community and having an almost narcisistic single-mindedness of purpose" (p. 165). These findings did not suggest that the artistic thinker was a collaborative learner, dealing mainly with process.

At present educational teaching practices have endorsed the use of sequential methods for learning. There are many methods on the market for systematically teaching overall study skills, such as Frender's method of *Learning to Learn* (1990). For the most part content materials are organized in a linear and logical reasoning fashion for the learning environment (meaning a deductive reasoning process where conclusions are drawn from an original premise). It is assumed there are various learning styles but the methods presented are all geared toward a sequential approach. This may not be adequate for all learners, especially in the arts. If we look at imagery in the spatial reasoning process, its placement is based on idiosyncracy and this kind of thinking is governed by the language of space and may not be able to be organized by words. The relationships of parts in space are formed by associations and connections of ideas forming a mental leaping process (La Pierre, 1990). This kind of processing may be related to thinking as a form of hypothesis testing where inducing, formulating, or extrapolating a rule is based on concept learning; problem solving is more of a Gestalt definition of thinking (Mayer, 1983). "According to Gestalt psychologists, the process of problem solving is a search to relate one aspect of a problem situation to another, and it results in *structural understanding*---the ability to comprehend how all the parts of the problem fit together to satisfy the requirements of the goal. This involves *reorganizing* the elements of the problem situation in a way so that they solve the problem" (p. 35). This method of thinking requires learning through understanding rather than through a recipe of steps or mechanical attention to the ordering of tasks.

The assumption being made in this paper is that the level of mental perception and awareness of an individual artistic thinker is based on figural structures and a thinking style that creates specific behaviorial characteristics that are not common to other populations. In turn these characteristics influence the learning ability of such individuals in an educational setting and affect the development related to growth in regard to obtaining knowledge. We know little about the priorities and values placed on the thinking process by those who utilize the artistic thinking style: What are the basic and common behavioral patterns that constitute artistic thinking in relationship to learning? How does the idiosyncratic patterning of individual thinkers fit into the learning process? How do spatial reasoning concepts enhance learning and apply to the obtaining and retention of knowledge?

In order to learn more about the artists' views of how they process and utilize information and the forces that have shaped their perspective, this research project examined the thought process from the adult learner's perspective. If we are to

be truly receptive to learners' needs, we must learn more about the artistic thinkers from their view of the mental forces that have shaped their lives and behaviors. Thus, an analysis based on self-reported experience (a naturalistic form of research) in regard to specific characteristics attempted to establish a better foundation for understanding figural-preferenced thinkers. It is assumed that the artistic thinker cannot be separated from his/her peculiar approach to mental processing, for the task of thinking is an activity that constitutes a unique phenomena (La Pierre, 1988b). Yet, common characteristics identify the thinking task as elements of a specific learning style, that of spatially-preferenced thinkers (La Pierre, 1988a). This analysis of observations related to self-knowledge can aid present learning situations for all individuals that comprise this particular group of learners. It can better assist the educational field in establishing an informed definition of what it means to think artistically and to set criteria for artistic intelligence.

The focus of this research project was to better understand the perspective of the individual professional artist in regard to his/her mental processing of information by using a self-centered, interview method. This same kind of self-report or naturalistic research method was employed by Ziegahan (1990) in an extensive research project dealing with adult literacy in a Native American population. She found that myths about the literacy problem in general were dispelled through her interview process. The results of her interview findings helped to establish a better definition of literacy in general and to set criteria for various degrees and types of literacy within the scope of the particular population being researched.

Methodology

The use of naturalistic inquiry allowed the investigator to select a sample that was contingent upon maximizing the scope and range of information obtained. While the researcher started with a focus and specific interview questions, new questions arose out of the responses given. Thus, theory emerged from the inquiry and was not established a priori (Ziegahan, 1990). This kind of research methodology required the investigator to be open minded and "go with the flow" of the interview environment. For example, coffee may have been served during the interview, a phone may have been answered by the respondent, or a child or adult may have dropped-in to say hello. The interview settings were conducted generally in the studio/ home of the professional artist. No attempt was made to adhere to a rigid, standard approach for each artist. The only requirement of the investigator was to ask the same questions in the same order for each artist. The interviews took from one to one-and-a-half hours each and were treated as informally as possible, allowing the artists to make comments regardless of the order of the questions. All interviews were audio taped.

The sample of artists were chosen from an overall population of professional artists within the state of Colorado. The following criteria were used to define a professional artist: (a) an individual who worked consistently as an art-maker; (b) an individual who devoted a substantial portion of his/her home to a stuidio work area; and (c) one who exhibited in galleries or invitational exhibitions on a regular basis. Some artists taught college level courses and conducted workshops on a part-time basis. Others were retired from teaching and worked full time as artists. The key point was that all artists interviewed worked consistently at the process of artistically creating a product. All artists were recognized on a national level as well known people in their fields. The average age of the respondents was 48.1 years.

It is highly unusual that a research project would name the subjects taking part. However, due to the nature of this project and the fact that well known artists agreed to be interviewed, the investigator made the decision to disclose the

names of the subjects of this research. Consent forms were signed by all of the artists for this purpose. This gave the investigator the option of "giving credit" to comments and remarks within this report. The focus of the interview questions on the individual artist's relationship to his/her own mental processing and idiosyncratic responses, as related to past experiences, was the factor that precipitated this decision. The fact that adults, in general, continue to grow and develop because of interest in participating and sharing their experiences and successes (Knowles, 1984) places a premium on who they are, how they evolve, and how they make an impact on life. For the artists involved in this study, the impact of their lives was felt and seen in the work that they made manifest as a profession; so, the fact that these particular artists were interviewed for this project was a reflection of what they had to share and communicate as recognized authorities in their profession.

The artists who agreed to participate in this project were Don W. Coen (painting), Lynn Flieger Countryman (painting), Rita Derjue (watercolor and painting), Douglas Fey (ceramic art and painting collages), Jutta Golas (ceramic art and sculpture), Rodger Lang (ceramic art and sculpture), David Mesple (painting and drawing), Carlene Schumacher (ceramic art and sculpture), Herb Schumacher (pottery), and Doug West (serography). Of the 10 artists interviewed:

- 6 were males, ranging in age from 40 to 59 with an average age of 48.3.
- 4 were females, ranging in age from 36 to 56 with an average age of 47.8.
- 5 grew up in White/ rural communities.
- 1 grew up in White/ urban communities.
- 3 grew up in White/ suburan communities.
- 1 grew up in rural Germany during the era of World War II.
- 7 had masters degrees.
- 2 had bachelor degrees.
- 1 had a doctorate.

Don W. Coen and Lynn Flieger Countryman were the first artists to be interviewed. Their responses were used as a pilot study to refine the interview questions and the procedures so that the investigator would not lead or bias the answers and the environment would not have a contrived feeling but rather would retain a spontaneous flavor. Five questions were not asked of Coen and Countryman because these questions were added as a result of the pilot. The added questions were:

1. Do you learn in a sequential, meaning orderly, manner?
2. Do you tend to interrupt people when talking?
3. Is your art work a product of you and your thinking process?
4. Tell me, can you remember when you first started to do art?
5. In what way was formalized education valuable to you?

The reporting of the responses for each question that was asked was based on the exact number of respondents. That is to say the above questions only recorded eight respondents rather than ten. All other questions had ten reponses recorded.

The total of 44 questions that were asked of all the respondents, except the two pilot artists, ranged in nature from childhood experiences in art to explaining their procedures for solving a problem to defining what spatial reasoning meant to them. These questions were developed as a result of the investigator's own experience in the arts and from previous research on spatial reasoning (La Pierre, 1987, 1988a, 1988b, 1990). The investigator grouped these questions into 10 categories. The categories were:

1. Thinking order.
2. Learning patterns.
3. Problem solving.
4. Visualizing.
5. Spatial reasoning.
6. Verbalizing.
7. Listening.
8. Experiences.
9. Personality traits.
10. Working or being alone.

Some of the questions overlapped other categories and were listed in this report under both sections. The purpose was to show the

interconnectedness of the responses for discussion and generalization. For example the question, "Do you use your hands to talk or to communicate with when holding a conversation?," fell not only into category nine (personality traits) but also into category six (verbalizing). Questions that were placed into two categories were only asked once. The categories were selected as a means of classifying common information so that this information could be considered for evaluative purposes.

Organization of Report

The report was organized into three major sections. The first section, Responses, was divided into 10 subsections. Each subsection examined and explored the artists' detailed responses to the interview questions in the 10 categories mentioned above. The questions were not asked in the order given below, yet the order of the questions was the same for each respondent.

The second section, Discussion and Conclusion, looked at the various dimensions of the findings, the commonalities, relationships, and enlightenments that took place from this research project.

In the third section of this report, Toward an Understanding of the Nature of Artistic Intelligence, a theorectical framework was forged as a result of the interaction of the iodiosyncratic responses of the artists and the common traits that each exhibited.

RESPONSES

Thinking Order

The questions in this section were asked to determine if a specific mental ordering of information for learning existed as a common characteristic of this population. Eight questions comprised the thinking order section. They were as follows:

1) Do you learn in a sequential, meaning orderly, manner?

Eighty-eight percent of the respondents said "no" to this question. Most of the answers given were just a plain "no" with no comments added. However, some artists added comments such as the following: Carlene Schumacher said, "I do not do anything in a sequential manner. I see the whole and then figure things out;" Rodger Lang said he "jumped into the middle and worked out in both directions, working out the details later."

The remainder of the respondents qualified their answers with a "no/yes" response. For example, Doug West stated he learned sequentially but "the real learning was more of an overall Gestalt method of forming concepts." Likewise, David Mesple said learning "depended on the information and how it needed to be taken in. I usually learn by an overview first (seeing everything at once), but I am also very logical and sequential."

The process of learning in a sequential manner is one that is a step-by-step kind of reasoning pattern. Some of the artists indicated that they were able to process information in this manner, but the overall findings were that the artists exhibited a holistic kind of thinking. The mental process was a problem solving activity that the artists engaged in, allowing themselves to imagine "what ifs?" and various consequences in order to get at an end-result, or product, or the understanding of a concept. The artists had the ability to imagine changes and consequences that did not flow in a linear manner.

2) How do you acquire and retain knowledge? What is your method? What steps do you go through?

The responses to this question fell into several categories, but they tended to overlap each other. It was found the respondents acquired and retained knowledge through the following ways: (a) by talking with and asking questions of other people; (b) by looking, watching, observing, listening and/or reading; (c) by relating to real life experiences; and (d) by repetitive and associative methods. All of these methods required some sort of physical activity to accomplish the goals of aquiring and retaining information. The awareness level of all of the artists interviewed, in regard to information that existed in society, was very high. It was necessary for the artists to internalize new information in some manner appropriate to their ways of doing things in order to remember it.

- Herb Schumacher found method "a" was best for him. He acquired and retained knowledge by "word of mouth." He liked to talk with people who had the information he needed.

• Doug Fey read a great deal, as did a number of other artists, and he said, "I absorb things---think about things all the time, excessively looking at different points of view." David Mesple collaborated with this kind of approach when he said, "I look at things and understand how they work and go together. I never forget it."

• Roger Lang listened to TV all the time when working in his studio. He said, "It creates a flow of information or loose pattern of connections that I hear several times. Then I remember things because details do not usually fit into a pattern for me to remember." Lang related that he did a great deal of reading.

• Doug West said in order to acquire and retain knowledge it could not be a rote learning experience. For him it had to have some "basis in real life that had interest."

• Carlene Schumacher said she needed extensive repetition to remember. She used the method of writing things out as a combination of physical activity (kinetic motion) with the visual in order to remember. Carlene also read a great deal to acquire information.

• Rita Derjue read and re-read in order to acquire and retain knowledge. She used this form of repetition in order to remember. "Usually I learn as an artist---looking at things and then breaking them down."

• Don Coen made a list and marked things off when very busy. This was his method of staying on track and not becoming distracted in order to remember things.

• Jutta Golas did something very ingenious with lists. She kept three by five cards and magazine articles for reference purposes. They were organized by date and subject matter in order for her to remember and reference new information.

3) Do you organize information in your mind in a progressive manner, meaning like 1 2 3 4 5 6 7 8 9 10, or do you jump around? (This question was also part of the spatial reasoning section.)

The purpose of asking this question was to determine the preferred way that artists mentally organize information. Eighty percent of the artists responded they jumped around in their thinking. The other responses indicated they had the ability to be both progressive and jumping in the organization of information. For example, Doug West said he was very structured in the execution and planning of a project, but jumped in his thinking process when working out concepts. Likewise, Herb Schumacher stated, "I organize information in a progressive manner when I am teaching--out of necessity."

Methods were devised by the individual artists to help organize information because they jumped. For example, Jutta Golas said she practiced "conscious discipline" in order to be more progressive because she was driven to get things accomplished and this allowed her to focus.

Similarly, Don Coen said he was easily distracted and jumped around. "If I see a weed while talking to someone, I may have to go over and pull that weed.... In order to stay on track, I make lists to be marked off."

Carlene Schumacher said she was well organized but had to do the progressive-type processing on paper. "It has to be visual---on paper." Otherwise, she stated she organized information in her mind by jumping around.

On the other hand, for David Mesple he said, "It is all jumbled up." He commented he had no fear of how his mind worked. "Fear makes one not able to 'see' the issues." He made no lists.

4) Have you been accused of jumping ahead or around in a conversation? (This question was also part of the spatial reasoning section.)

The assumption made by asking this question was that artists' speech patterns may tend to mimick their thinking pattern which is spatial in nature. The responses to this question confirmed this assumption. The majority of artists (60 %) said "yes" to this question. When asked if people got mad at them for this, they responded with "yes" as well.

• Doug Fey said people got mad at this tendency because it was confusing to them. "They do not see the connections because they are too logical."

• David Mesple said people got a little mad because "they do not understand why we are talking about this now."

• Herb Schumacher said people were more frustrated with him than mad when he jumped ahead or around while talking. Other "people cannot see the connections of statements or ideas."

• Rodger Lang said "yes" to this but "worked against it." When he did jump ahead or around in a conversation, it was because he liked "to connect ideas from different contexts."

• Rita Derjue said she did this because she "wanted to get on with the conversation. Why solve something that has already been resolved?"

• Lynn Flieger Countryman saidpeople got mad "unless they were the same kind of thinker." She stated, "Sentences and thoughts do not need to be completed when talking with the same kind of people as myself."

5) Does your thinking process follow a logical sequence or order of events or does it leap from one thing to another? (This question was also part of the spatial reasoning section.)

Sixty percent of the artists responded they leaped from one thing to another in their thinking. The other responses indicated they could do both leaping and sequential ordering of thoughts. Of the responses given, the following comments were made:

• Lynn Flieger Countryman said it was hard to hold onto and contain her thoughts because they leaped so fast---"I can't turn off the possibilities."

• Herb Schumacher gave an example that sometimes statements he made to others in conversations did not appear to have meaning to them but would bring about new perspectives (insights) in the end---like bouncing-off ideas that became points of departure for solutions.

• Doug Fey responded he could do both kinds of thinking, but it depended on the particular situation and the mental process that was needed.

• Doug West stated his creative work required sequence of execution. His silk screens had many layers of color and each application was dependent on the other. However, he stated when he was in a "free wheeling" thinking mode, he "leaped and rambled" in his thinking. This gave him "flashes of insight."

• Don Coen said, "I do not let logic hamper me. I am logical but put obstacles in my way to think in different ways---in more unique ways." This method allowed him to move in all directions mentally.

6) Can you describe how your mind works? Are there steps or a pattern to your way of thinking? Is this pattern an automatic way of thinking for you or is it forced or contrived? (This was a three-part question.)

The purpose in asking these questions was to determine if the artists were aware of the thinking process on a conscious level; and if so, what form did it appear to take. The responses indicated that the thinking pattern was generally a holistic look at first---a grasp of the situation as a whole. For example Don Coen said, "I look at the problem first and consider ways of looking. Then I spin-off of what I see." The artists looked for commalities or patterns within the thinking process that would lead to a successul project or end result. This appeared to be the thinking style in relationship to art work. However, sequential thinking methods were used to execute that art work.

All of the artists (100%) said their style of thinking was automatic and not forced. Rodger Lang commented it could be contrived but that he had learned to "let it work" and "to stand out of my own way" in regard to the thinking process. Doug Fey and Herb Schumacher expressed the ability to switch with ease between holistic and logical thinking when needed. More specific responses to the question included the following:

• David Mesple stated, "there are no specific steps involved, but rather I am aware of commonalities, such as the quickness of visualness, and then I am able to sort out important aspects of the 'big picture.' I can mentally hold onto the big picture and then all the little facts come back to me. "

• Lynn Flieger Countryman said, "I seem to grasp or develop an awareness of the whole idea first and then go back and think of the details or steps and how to solve it."

• Carlene Schumacher said, "I see patterns and I am very in tune with the little pieces of information that come in from the outer edges, such as from the past, from the side, or from behind my view. It is not a logical or step-by-step process."

• Herb Schumacher said there was a pattern as to how his mind worked and that it depended on what he was doing. For example, there was no sequence for thinking in art unless he was doing structured technical things such as firing or forming. Then the process became sequential in nature.

• Doug Fey agreed with Herb Schumacher by saying his way of thinking changed depending on the situation. He said, "I seem to think in different patterns---both in logical and practical, and intuitive."

• Rodger Lang stated he could be project oriented, meaning orderly. However, in his art work things came together as a center element---like an assemblage. He saw it as a holistic approach which was spread out for details. He said, "I respect my intuitive processing."

• Rita Derjue said she "looked at consequences, possibilities, alternative ways, or what ifs?. I do a lot of reasoning and that means alternative ways of getting around something."

• For Doug West and Jutta Golas the end result was an important concern and the process was more illusive---it "grew and changed" after the whole conception of the idea. Jutta involved herself in thinking about what would be the consequences of doing such and such---the possibilities (the same as Don Coen's "ways of looking" or Rita Derjue's "alternative ways"). Doug West stated, "Sequential steps were needed to reach the goal" that had been

thought out.

7) List your thinking order when solving a nagging problem. 1....2....3....4....

The assumption made in asking this question was that a "nagging" problem would force the individual to spend more time solving the issue and thus make him or her more aware of the mental process. This appeared to have been the case. Eight out of ten (80%) of the respondents indicated the first thing that was done was to figure out why something was a problem---to define the problem as a problem, to grasp the essentials or essence, to articulate or write it down, to focus or force the self to go step-by-step in finding a solution.

Two respondents (20%) stated the first thing they did when solving a nagging problem was to deny that a problem existed. Rodger Lang stated he put off effort to solve the problem and kept it at a distance from himself. According to him, that is what made it a "nagging" problem to begin with. Rita Derjue added to this. She said she needed to set aside time to do it (to think about it)---to create a time frame to solve it.

The next step in the thinking order was to look at or evaluate alternatives, ideas, concepts, and options; as Carlene Schumacher said, "I feel it by playing with possibilities and mulling it over." Doug Fey also said he "turned it over" in his mind. At this point in the thinking order, Herb Schumacher utilized previous knowledge that might assist him or he talked with other people to help clarify. This step was one of figuring out how to solve the problem. Lynn Flieger Countryman talked it out to herself by actually making a speech. Doug West said he "mapped out a solution."

The final major step concluding the process was to create a solution. According to Rodger Lang, "acting and getting in touch with the solutions and alternative" was the final step. Or, as Jutta Golas said, "get it done and make space again to be free."

Carlene Schumacher said it was a "thinking and waiting" process because some steps were mixed up together. Lynn Flieger Countryman said the "solution would just come."

8) Have you been accused of finishing another's story or conversation?

Seventy percent of the respondents said they had been accused by others of finishing a story or conversation. Three respondents said "no" to the question. Of the artists who said "yes" when asked why they did it, they responded that people were either too slow or they knew what the person was trying to say or what they meant to say.

Of the artists who said "no," they added they had learned not to finish another's conversation because teaching school had taught them not to do that.

David Mesple said his "mind was fast and that he butted in all the time." Doug West said, "I cannot hold my tongue." He even supplied words to finish their sentences. Rita Derjue expressed her impatience and broke into the conversation to" get on with it."

The fact that a large percentage of the respondents broke into conversations and finished telling the story indicated that the thinking process was more holistic in nature and the artists were able to surmise where the conversation was heading. They did not need to go through the sequential process of a whole conversation in a step-by-step manner. In fact, Lynn Flieger Countryman said, "It was a waste of time."

Learning Patterns

Learning patterns had to do with five specific questions that were more general in nature in regard to thinking process than section one, thinking order. The purpose of asking these questions was to determine how information was taken in and what the value of extrinsic information was in relation to intrinsic processing. The questions for the learning patterns section were as follows:

1) Do you like to teach yourself things?

The assumption made here was the concept of teaching oneself how to do something gives the learner the ability to utilize or compensate for a lack of knowledge by acquiring a particular skill through an active learning process. The learner is motivated by the fact that he/she is an active participant, pursuing self-instruction for a purpose.

The process of learning for the artist seemed to be a means to an end, a means of accomplishing an end-goal or product often related to his/her own art work. For example, Don Coen said, "I taught myself the skill of airbrushing." He is nationally known for the use of this technique in his paintings.

- Doug West expressed the fact that he liked to teach himself "anything--from mechanical, to historical, to technological, to artistic."
- Doug Fey qualified his answer by defining

teaching as a more "laborious activity with predetermined goals" and learning things as more "experimental in nature." He stated he "liked to discover things---to learn things." For example, Fey had an interest in theorectical physics and had been reading on this subject. This allowed him to question concepts and to expand his knowledge of the universe. Therefore, his answer was a "yes/ no" one.

• Herb Schumaher stated, "I was not comfortable in a classroom situation because of the structure and the teacher's difficulty in relating to abstract people such as myself. There was no imagination in teaching methods. Only hard, cold facts were presented." Schumacher made and flew model airplanes. He had been studying aerodyamics on his own to learn more about flying and the construction of airplanes.

These examples of responses pointed to the fact that what the artist did not know, he/she took the time and effort to learn from self-instruction. This pattern was pervasive with all of the artists interviewed (90% specifically stated they liked to teach things to themselves). This kind of response indicated an active participation in the learning process that was directed by the self and for the self to meet a specific need or goal, such as enhancing the creation of a piece of art work.

2) Do things need to have meaning in order for you to learn something new?

The majority of the artists (70%) responded that things needed to have meaning in order for them to learn something new. Referring to Doug West's response, he stated, "personal meaning precipitated personal involvement in order to give impetus to learning something new. Then I delve into the subject in depth." Carlene Schumacher stated in everything she did she "looked for the meaning--the deeper meaning." These comments and others like them related the process of learning something new to the self.

The responders that said "no" to the need to have meaning in order to learn related the desire to learn about everything. For example, Rodger Lang stated he liked to extend his "range of skills--in any direction." Herb Schumacher stated he "liked to know about anything" that intriqued him.

The overall pattern that emerged from the responses to this question was that the process of learning (whether learning was related directly to having meaning or not) opened mental horizons to information that at some point may be used in the process of creating the artist's art work.

3) Are you able to think with loud noises---such as a TV, radio, or people talking in the background?

Seventy percent of the respondents said they could not think with loud noises. Many of the artists questioned the meaning of the word "loud" and qualified their responses with comments. For example Doug West, when talking about creative problems, said music triggered for him the ability to "detach my mind and to allow me to see from many different angles." Don Coen stated he could "operate with TV in the background, but when in a crunch for time I must have silence or quiet" in order to concentrate. However, Coen did play loud music when painting in his studio. Rodger Lang stated he "was able to think with some kinds of noise, but that it could not be loud."

Many of the artists stated they played music or the radio when doing repetitive kinds of work in their studios. The noise was present as long as it did not distract from focusing or concentrating on a creative project.

4) Did schooling enhance your thinking process? (This question was also part of the experiences section.)

The responses to this question were divided into three categories: (a) "no;" (b) "yes;" and (c) "no/ yes." Five respondents said "no" and three said "yes." Two respondents said "no/yes." The responses indicated that the artists were aware of the creative process involved in their thinking style and that in many cases schooling was not generally supportive to such thinkers (except for art school).

The following responses were given as follows:

• Doug West said, "It helped to refine it, not necessarily to enhance it." He felt that academics could not address creativity and that in pursuit of knowledge and learning, he educated himself by drawing on the experiences of others.

• Don Coen said, "Creative thinking is looked down on and not encouraged in a school setting. Schooling is rote memory."

• Lynn Flieger Countryman said she struggled with school but was a good student. " It was not condensed enough and I wasted time."

• Doug Fey said, "I did not like it until art school. It wasn't okay to look at things the way I wanted to look at them." He felt that school delt with pieces of information with no tie-ins to concepts.

• Rita Derjue responded with "yes" to the question. She said, "I had to pay attention. School gave me the basics of memorizing and repetition. However, I learn as an artist---looking at and breaking

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things down."

• Rodger Lang found public school to be good for him. He learned about sources of information that fed his thinking process.

• Herb Schumacher responded with a "no/yes" answer because he thought school only enhanced his thinking process when he was a junior or senior in the college art program. There he had an exceptional teacher who helped him to question and solve problems.

• David Mesple said, "No/yes because certain teachers let me think and some slowed me down."

5) Does your mind wander at times?

All of the artists (100%) responded to this question with a "yes." The responses indicated the artists experienced and enjoyed frequent changes of thought because it added to problem solving activity and alleviated mental boredom. Answers to solving a problem might spin-off a distracted mental incident, such as when the mind was wandering. Wandering occurred when driving a car, when holding a conversation with another person, when relaxed, but it was not necessarily situational in nature because it happened all of the time. For example, David Mesple stated his mind wandered all of the time and he experienced "mico brusts of thoughts within thoughts." Rodger Lang described it as "flashes" of thought or "plans of attack." Carlene Schumacher stated her mind wandered every 20 seconds with "frequent changes of subjects." Doug Fey stated his mind wandered frequently because of "boredom."

Problem Solving

Five questions made up the section on problem solving activities. These questions were asked to determine the nature of problem solving as a mental process. How did the artist approach an issue to be solved? In the art field, setting parameters (sometimes called "creating" problems) in order to solve problems is part of the learning process, especially in design, drawing, and painting classes. Is this way of teaching problem solving in the art field done because it is intrinsic to the art process itself? Do existing elements and problems help to expose a solution because they create a structure or base from which to create and question? According to research on imagery by Finke (1990), this may indeed be the case.

1) If you were lost in the woods in an area where you had grown up but had not visited for over 20 years, what would you do?

It was apparent by the answers to this question that the majority of the artists needed to gather their thoughts and to mentally focus so as not to panic. It seemed obvious to the respondents that in order to find a solution, it was necessary to control their thoughts in an orderly manner, and that to panic or to become confused would not lead to an answer. Thus, the situation became a problem to figure out, even though the situation was more immediate and created a higher emotional level of awareness for the thinker. All of the respondents said they would not panic; and those that said they could, made a conserted effort to control this emotion and to problem solve on a logical level. For example, Don Coen stated he would sit down and gather his thoughts. He said people have a "tendency to hurry because they are afraid." Coen said he would not become overwhelmed, but rather would look at the situation "piece by piece."

• Lynn Flieger Countryman said the same thing. She would sit down and not panic and be logical without using energy.

• Rodger Lang said he would tell himself not to panic and then he would set about in an orderly manner to solve the problem by looking for clues from his environment---such as telephone wires to follow out.

• Juta Golas said she needed to get an orientation first and then solve the problem. "Where did I enter and where will I come out?"

• Doug West said he would "figure it out by working out a strategy." He stated he would look to his environment to solve the problem, such as watching the position of the sun and looking at shadows in order to find direction.

• Carlene Schumacher said, "I would look for signs in nature to help guide me. I trust the natural world for answers. I would not be afaid to experiment in order to figure it out, such as walking and walking since I do a lot of walking anyway."

• Rita Derjue also felt comfortable with nature because she said she was an outdoor person. In order to solve the problem, "I would make a study of where I was standing, check my visual notes, use a literal approach, work with what I've got, and use all of my abilities from past experience."

Three respondents (30%) said they would have anticipated the changes that had been made

over 20 years. For example, David Mesple said he would look for rememberances (recognized features) and picture how the scene may have changed. Herb Schumacher said the same thing. He would "look around to see how things had changed, compare now to then, and reflect on this visualization."

• Doug Fey said he would know his way out even though things had changed because he would have "anticipated the changes."

2) Is creating a problem different or the same as solving a problem for you?

It was determined by the investigator that this question did not get at what was intended. It was confusing and several respondents stated this opinion. The artists were not sure what was meant by creating a problem---Was it making a mess of things? However, the answers to this question were given because even though the responses indicated an even split---(50%) said the same and (50%) said different---the findings indicated that the artists saw the processes of "solving" and "creating" in similar ways to each others' responses. For example, David Mesple said he "did not create problems, but rather set tasks to be solved and in the process of solving a problem discovered new problems to solve in the solution." Lynn Flieger Countryman said, "Solving creates new problems---a circular and continual process." Each of the above artists answered the question as different (Mesple) and as the same (Countryman), but when asked to explain their answers, the responses seemed similar to each other. This led the investigator to conclude that the question was not phrased correctly. The following are other responses to the question:

• Herb Schumacher stated they were the same because "an innovative person presents problems to himself and in the process of continuing to be innovative solves those problems on an ongoing basis---problem, solution or two problems or one solution."

• Doug Fey added to this point of view by saying the purpose of creating a problem was to "establish a question" and the purpose of solving a problem was to "reach a conclusion." He stated, "They are the same process but go in different directions."

• Jutta Golas stated this in another way when she said, "Solving was like letting the air out---all is easy and the tension is gone." On the other hand, "Creating is like going uphill because there is tension."

• Doug West said he could not imagine creating a problem because this was not the focus of his life. He stated, "The foundation of my life is to create order out of chaos." This was the overall theme of his purpose in living and he said he only "focused on solving problems."

• Don Coen said they were the same because the processes involved doing things that had never been done before.

• Rodger Lang said the issues are often closely related.

3) Do you like puzzles and/or mysteries?

The responses to this question indicated that 50% of the artists liked both puzzles and mysteries. Thirty percent did not like either one. One respondent (10%) just liked puzzles and another (10%) just liked mysteries. Of the respondents that answered "yes" to both, they all stated they liked to figure things out and liked solving the unknown. For example Rodger Lang said he found both to be a mental challenge and likened his work to a puzzle arrangement.

• Don Coen said he enjoyed both because he "liked the unknown, the challenge, the chase of figuring it out."

Two of the respondents who said they did not like either puzzles or mysteries stated they got bored with these games or the games were a waste of time. For example, David Mesple said he had to have "practical application to solving something and that it was a waste of time for the mind to think about things that have no results." The respondent who said "no" to liking either puzzles or mysteries said she wanted to read about "real things" and there was too much to know about in regard to "conscious" existence.

• Doug West said he liked puzzles and not mysteries. However, he specifically liked puzzles that were games such as chess. He stated that chess was "not just chance" and he had "some influence over the end result because it required more interactive thinking---analytical thinking and strategy planning."

• On the other hand, Herb Schumacher said he did not like puzzles but he did like mysteries because he could visualize the answers. "I am always about 10 steps ahead thinking about it."

Whether the respondents answered "yes" or "no" to both or "yes" to one and "no" to the other, they indicated an awareness of their thinking style and how such activities affected them in regard to solving a problem. The majority of responses indicated such activities stimulated their ability to solve a problem and to perhaps visualize.

4) Do you like to share new ideas and explore

concepts in conversations?

The responses to this question indicated 100% of the artists liked to share new ideas and explore concepts in conversations. It was a learning experience for the artists to talk about new things and to share new things. It also was a form of problem solving to "grow with feedback," as Carlene Schumacher put it.

5) Do you like to brainstorm?

The responses indicated 90% did like to brainstorm and 10% did not. Herb Schumacher summed it up for the majority when he responded with "Oh, yes!" On the other hand, David Mesple felt that brainstorming was "contrived and artificial." He liked to brainstorm with himself and not with others.

Visualizing

Five interview questions comprised this section. They dealt with the concept of "seeing in the mind's eye" and how this was achieved by the artist. The questions were as follows:

1) Do you "see" in your mind? If yes, how?---with pictures, symbols, unrecognizable images of forms or shapes, or flashes translated into words?

The responses indicated 100% of the artists could see in their minds. Forty percent stated they saw with images. Thirty percent said they saw with pictures. One artist (10%) said he saw in pictures and images. Another artist (10%---Lang) reported both imaging and translating into words. In this response, Rodger Lang said he was able "to see through images and flashes the connections to words and then to transform these connections into visual elements."

• Doug West did not elaborate on his "yes" answer; but when the question was asked, he responded with "Absolutely, yes!"

It is interesting to note that not one artist said he or she saw in symbols. As a matter of fact, Doug Fey stated specifically that he did not see words or symbols.

According to Webster's II New Riverside Dictionary, the word image is defined as "a mental picture of something absent or imaginary." This definition put the mental function of imaging and picturing as closely resembling each other in nature. Using this assumption, the results of this question indicated 90% of the responses were in agreement with each other---the artists either imaged or pictured their thoughts.

• Jutta Golas gave an interesting response when she equated "feeling" with the translating of imagery. Rita Derjue also spoke of this "intuitive" imagery. Both of these artists said they thought constantly of shapes and colors.

• Herb Schumacher said he explored potentials of subtleties by the use of picturing. "I can take an idea and visually flip through and see a miriad of ideas---constantly changing the ideas as I go."

2) Do you visualize your thoughts when you think?

All of the artists (100%) said they visualized their thoughts.

• David Mesple stated visualization was what thinking was for him---"never words, just pictures."

• Rita Derjue said she was "able to visualize results."

• Carlene Schumacher said she was "able to visualize feelings."

• Doug Fey said he visualized various scenarios about things such as meetings or space arrangements. But, in regard to his own art work, he stated he "visualized the concept first; and then in the process of producing the drawing, the pieces just fell together as a discovery."

• Herb Schumacher said he visualized ghost stories when he was telling them. He said, "I am able to see it and talk about it as it happens."

• Don Coen said, "I am able to see the image and to let it flow out of my hand when painting."

What seemed apparent from these responses was the artists visualized a basic concept in regard to creating and then intuition, feeling, or discovery took over as a result of the initial visualization process.

3) Do you "see" things from different points of view, different angles? (This question was also part of the spatial reasoning section.)

All of the artists (100%) indicated a "yes" response to this question.

• For example, David Mesple stated he could "rotate objects as well as see all levels of construction as in a blueprint."

• Carlene Schumacher responded in a similar manner when she said she could "see it and flip it and see it again." She said, "I understand mentally other points of view."

• Rodger Lang stated he was "able to mentally walk around his work as well as see all the different perspectives in regard to ideas." He said he was interested in both arguments that were for and against a particular issue.

• Jutta Golas made a distinction between her art work and issues in general. She said she saw "all angles and points of view in regard to her work---could see the whole picture." But, she stated, "I have a more narrow perspective in regard to cause and effect for such issues as war, for example."

4) Have you ever fantasized when visualizing a concept? In other words, have you "stretched" or "expanded" the imaginative picture in your mind so that the image seemed ridiculous or an unreal approach to the concept? Is it almost unexplainable in words for a second?

The responses indicated 80% of the artists said "yes" to this question and 20% said "no." Some of the responses that were given by the "yes" group are as follows:

• Jutta Golas said she went on "a voyage of weird shapes---a state of daydreaming to analyze reality---unreal, but not ridiculous." She said she had a feeling of floating.

• Don Coen stated he did this kind of thing "many, many times." He said he had a feeling of flying.

• Rodger Lang said he always "explored the extremes in this way."

• Doug Fey said he did this kind of fantasizing more as a child than as an adult because he learned not to do this.

• Lynn Flieger Countryman said she would "imagine herself in the place of something else, such as a chair."

The following responses are from the "no" group:

• Doug West said his creative direction was not fantasy and that he did not visualize to absurdity, but rather he created images that were distortions of reality.

• David Mesple stated he was "very reality oriented and could visualize the physical possibilities of something, not the impossible." He gave an example of what he meant by saying when he took math in school, he had trouble visualizing an imaginary number because there was no mass or substance to visualize---"I could not see a picture in my mind."

The difference between the answers had to do with the concept or definition of reality. Perhaps it was a matter of semantics or even of artistic style (preference) rather than the ability to imagine the unreal. Fantasy that was of a ridiculous nature was not considered by some of the artists to be tied to the physical world and to think in this manner appeared to make the solution to a problem impractical or unusable. On the other hand, the ability to imagine the potential of the ridiculous as a problem solving tool was strongly indicated by the majority of responses.

5) When someone is explaining something to you on paper, do you move the piece of paper to see better? Do you need to see it for yourself? (This question was also part of the listening section.)

All of the artists (100%) responded with a "yes" answer to this question. As Don Coen said, "I like to see it." Five of the 10 artists (50%) clarified their answers by saying it depended on the situation because they could see and understand upside down.

The results of this question indicated the artists related "seeing" with understanding. The individuals who were able to understand and see upside down could mentally manipulate the image, depending on the complexity of the siutation. For example, David Mesple explained that a more complexed image required him to turn the paper to see. Otherwise, he could see upside down. This ability did not necessarily mean these artists mentally transposed the figure to a right side position in order to understand. It could have meant that the image was actually utilized in the upside down position. More research would need to be done on just how some artists see and understand images in an upside down manner.

Spatial Reasoning

The spatial reasoning questions were asked to determine how the concepts of space and form were thought of in the context of intelligence and how information was organized in the thought process. There were seven questions in this section. Of those seven questions, five questions were classified in other sections as well. All of the questions in regard to spatial reasoning, however, are listed as follows:

1) How do you define spatial?

The responses to this question were varied, yet similar in nature.

• Don Coen defined spatial as "how a breaking-up of space took place because reasoning was problem solving."

• Rodger Lang gave an example in order to define spatial. He said, "It is like trying to fit suitcases into a car or pots into a kiln for firing. There are different visual relationships to be considered."

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• Herb Schumacher said, "Spatial is not two-dimensional. It is the place in which we live and we are surrounded by it."

• Carlene Schumacher said, "It is three-dimensional and the internal space in which we function."

• David Mesple said, "It is the reality of three-dimensional life."

• Lynn Flieger Countryman said, "It is not just flat or one plane. It is many planes or options---"what if?" situations, different dimensions---not just this dimension or reality."

• Doug Fey defined spatial as "something in its totality---not flat---not one dimensional."

• Rita Derjue thought of it first as a landscape in nature. Then she said she mentally "translated it into two dimensions on a piece of paper to artistically confine it."

• Jutta Golas defined it as "limitless with no boarders, but open, open, open."

• Doug West defined spatial as "whole-dimensional, as limitless in depth, and as having a limitless horizon."

These answers indicated that the concept of space was not limited to two dimensions, but rather was tied to the three-dimensional world in which the artists existed. To reason spatially was to engage space in terms of expanded dimensions (limitless or otherwise) and the various visual relationships that occured from thinking about this space.

2) Is spatial reasoning a form of intelligence to you?

Eighty percent of the artists responded "yes" to this question and 20% responded with a "no" answer.

• David Mesple said "no" because "thinking spatially is the interaction with your physical world."

• Jutta Golas said " no" because she said she had never thought about it before.

For those artists who responded "yes," spatial reasoning was a way to analyze, to toss ideas around, to problem solve, or to view things from different angles.

The responses indicated the word "intelligence" made some of the artists uncomfortable because reasoning spatially was natural to them and they probably had never been asked to verbalize about it before in relation to their own behavior. Carlene Schumacher perhaps may have summed up the situation when she responded with the following: "It is my form of intelligence. I am extremely skilled in that way of thinking, and I function so clearly in that world."

3) Do you think you are more spatial than most people? (This question was also part of the personality traits section.)

All of the respondents (100%) thought they were more spatial than most people. The responses indicated that the artists thought it was because the process was second-nature to them, innate or genetic, their own approach to thinking, or they were more aware and practiced it on a regular basis.

4) Do you organize information in your mind in a progressive manner, meaning like 1 2 3 4 5 6 7 8 9 10, or do you jump around? (This question was also part of the thinking order section.)

Refer to page six, question number three of the "Thinking Order" section for responses to this question.

5) Have you been accused of jumping ahead or around in a conversation? (This question was also part of the thinking order section.)

Refer to page six, question number four of the "Thinking Order" section for responses to this question.

6) Does your thinking process follow a logical sequence or order of events or does it leap from one thing to another? (This question was also part of the thinking order section.)

Refer to page seven, question number five of the "Thinking Order" section for responses to this question.

7) Do you "see" things from different points of view, different angles? (This question was also part of the visualizing section.)

Refer to page 12, question number three of the "Visualizing" section for responses to this question.

Verbalizing

Three questions were asked in this section to determine what form the communication of ideas or concepts took when talking. The questions were as follows:

1) Do you have a difficult time verbally forming sentences or putting words together when you are excited or passionate about a subject?

Seventy percent of the respondents replied with a "yes" to this question. Thirty percent said "no." When asked to elaborate on their responses, the artists gave the following explanations:

• Don Coen who responded "yes" said, "I am a verbal person, but I do not finish my sentences because I can't wait to get ahead."

•Lynn Flieger Countryman who also responded "yes" said, "I am thinking too fast."

• Doug Fey said, "Sometimes yes. The brain and the images are working a whole lot faster than the mechanism that allows for the construction of sentences. I can see the images and understand far quicker than I can explain in words---It is instantaneous."

2) Do you use your hands to talk or to communicate with when holding a conversation? (This question was also part of the personality traits section.)

All of the artists (100%) said "yes" to this question. This indicated that the artists used their hands as another way of expressing feelings and to emphasize the spoken word.

• Rodger Lang said, "I do it for emphasis and to express excitement."

• Jutta Golas said, "It gives more emphasis to the spoken word."

• Rita Derjue said, "It is an extension of my body to put across my intentions."

• Carlene Schumacher said, "It is a way of bringing the words into being---a spatial thing."

3) Have you been told that you exaggerate things? (This question was also part of the personality traits section.)

Eighty percent responded with "yes" to this question and 20% said "no." This particular question created brusts of laughter and smiles from the "yes" group. These artists indicated that their families, friends and / or peers had told them they exaggerated. It appeared that exaggeration was: (a) another way of emphasizing a point (like telling a story or using hands when talking to add interest and "punch"); or (b) being able to mentally see the whole picture (the full potential of something) before anyone else and thus others would think it was an exaggeration.

• Lynn Flieger Countryman said, "People who cannot understand the whole concept may use put-downs."

• David Mesple said, "Oh yes. Who has not told me this?"

• Rodger Lang said he knew when he was exaggerating, and it was done on purpose at times.

• Doug Fey said that he was told more often as a child that he exaggerated.

Listening

Four interview questions were asked in this section. They had to do with taking in information by listening. Questions number one and two were asked at different times during the interview. Question one was placed third in the interview order and question two was placed 20th. What was interesting to note in regard to the results was the same artists answered "yes" and "no" to both questions, with the exception of two artists who answered "yes" to one question and "no" to the other. This showed the questions were a reliable indicator and brought forth consistent responses.

1) Do you often not listen when spoken to?

Seventy percent of the artists said "yes" and 30% said "no." The results indicated the artists were preoccupied with their own thoughts.

• Doug Fey said, "Sometimes I've got better things to think about and am not interested. I may already understand what the conversation is about, so there is little reason to keep listening."

• David Mesple said, " What I'm thinking is more interesting than what is being said by others---not important."

• Lynn Flieger Countryman said, "It is not important to listen."

• Jutta Golas said she was "so occupied" and her brain was full. She commented she was "never dry" or "never out of ideas."

• Rita Derjue said, "It depends on the speaker and subject matter." She did not listen because it was not important and her mind was wandering.

• Doug West said there were periods of time when he was absorbed in thought.

2) Have you been told that you do not listen?

Seventy percent of the artists said "yes" and 30% said "no." Two of the three that responded "no" said they were good listeners. The other said he was not aware of being told he did not listen.

• Lynn Flieger Countryman said she" tuned-out" at times because she practiced "selective listening."

• Rodger Lang said that he did not pay attention.

3) Do you tend to interrupt people when talking?

Seventy-five percent of the artists said "yes" and 25% said "no." (This question was not asked of the two artists in the pilot.) The responses indicated

that the artists processed information quickly and could not wait to respond because the conversation was moving too slowly.

Of the artists who responded with "yes," some of the following comments made were as follows:

• Doug West said a conversation would stimulate a thought, and he found it difficult to restrain himself from interrupting.

• Jutta Golas said she would get an idea and wanted to share it.

• Rita Derjue said she found people to be too slow in their descriptions, or she wanted to get a question answered.

• David Mesple said, "People are too slow."

• Doug Fey said, "I am wanting to hurry along---get to the conclusion---get to the important stuff."

• Herb Schmacher responded "no" to this question, but he said he used to interrupt people. His political career as a college department head taught him not to insert his opinion.

4) When someone is explaining something to you on paper, do you move the piece of paper to see better? Do you need to see it for yourself? (This question was also part of the visualizing section.)

Refer to page 13, question number five of the "Visualizing" section for responses to this question.

Experiences

Four interview questions were asked in this section. They were designed to obtain background information about when the individual remembered certain ways of thinking or doing things that related to art and the manner in which other people and education affected their lives in terms of their thinking processes. The questions were as follows:

1) Tell me, can you remember when you first started to do art?

Eighty-eight percent (7 out of 8---This question was not asked of the two pilot artists.) recalled detailed memories of doing art when they were children. The majority were playing at art before formal schooling or shortly after starting school. For example, Herb Schmacher remembered fashioning pots from dirt at about 7 years of age (Incidentally, he is now a potter and ceramic artist.).

The only artist who did not give early age examples was Jutta Golas. She said her growing up in Germany and the war affected the direction her schooling took. At seventeen years she remembered seeing her cousin doing pottery and wanted to do it.

2) Have you been told that you were stupid at some time in your life?

Sixty percent of the artists responded "yes" to this question and 40% responded "no." The "yes" answers indicated that if the respondents did not perform on a level expected by others, they were either subtly or overtly accused of not "measuring-up" and did not have what it took to succeed. Of the artists who responded with "no," their thinking process appeared to be valued either due to circumstances or because they were able to adapt. For example, Jutta Gola was brought up in Gemany and the effects of the war left her family poor; so, she said her ability to be "ingenious was a necessity in order to make something of herself," and this was regarded as an asset.

3) Did schooling enhance your thinking process? (This question was also part of the learning patterns section.)

Refer to page 9, question number four of the "Learning Patterns" section for responses to this question.

4) In what way was formalized education valuable to you?

The majority of respondents indicated they gained a sense of awareness and structure from their educational experiences. The following were some of the responses:

• Rita Derjue said, "It gave me structure because I needed to learn the process of design---good and bad design."

•Doug West said, "It provided an environment to stretch personal boundaries."

• Doug Fey said that formalized education "built knowledge and introduced me to things. It established a pattern of responsibility and discipline."

• Carlene Schumacher said, "It gave me a format for my own investigation." She said she learned socialization and basic skills.

• For David Mesple, school was a "great source of information."

• Herb Schumacher was not sure that formalized education was valuable to him because he was interested in other things.

Personality Traits

The questions in the personality traits section were designed to bring out common behavior characteristics. Nine interview questions made up this section and were as follows:

1) Have you been told that you exaggerate things? (This question was also part of the verbalizing section.)

Refer to page 15, question number three of the "Verbalizing" section for responses to this question.

2) Have you ever been told that your sense of reality is different from most other people?

Seventy percent of the artists said "yes" and 30% said "no." The majority of the responses indicated that the artists internalized what they saw of the external world differently from others. For example, Rita Derjue said she "saw things in the natural world more acutely than other people. I pay attention to different things."

• Doug Fey answered, "Absolutely... yes." He said everyone had told him his sense of reality was different---whatever the situation.

• Doug West answered "yes" in terms of how he saw things. He said, "Others don't see it this way. It heightens their awareness when they see my work."

• David Mesple said, "I have been told that other people don't think like me---my jumping thoughts. Fear makes one not able to see the issues."

• Lynn Flieger Countryman said she was told her sense of reality was different, especially by people who could not see the whole picture.

• Carlene Schmacher answered "no, but..." to this question. She said she had not been told directly, but she said, "I feel that I am different. I think because I can see alternatives---alternative realities."

3) Do you act out your emotions?

Fifty percent of the artists said "no" and 50% said "yes." The responses indicated the artists either were very expressive emotionally in an open way or they repressed or internalized emotions because of family upbringing. To be openly emotional and expressive is often suppressed in this society. The "no" group may have been expressing the fact that family life and society in general regulate personal actions.

The following are responses from the "no" group:

• Carlene Schmacher said, "I swallow them because of my family upbringing."

• Doug West said he repressed them because of his religious upbringing.

• Herb Schumacher said, "I internalize them. This comes from my family upbringing."

• Lynn Flieger Countryman said, "I used to."

The following are some responses from the "yes" group:

• Jutta Golas said, "I openly show my feelings--there is no middle of the road."

• Rita Derjue said she was verbal first, then exhibited physical excitement or demonstrations.

•David Mesple and Don Coen both said they acted out heir emotions almost all the time.

4) Do you consider yourself to be different or unique from others?

All of the artists (100%) responded "yes" to this question. When asked to elaborate on why they felt different, the respondents replied passionately. For several artists this was a cause of great agony. The majority agreed with each other that their thinking processes were different from other people's, and they were more aware of life. The following were some of the responses given:

• Rita Derjue said she was more expressive, more acute visually.

• Don Coen said he was different in many ways, but his passion for life was more than most people.

• Jutta Golas said she had a great capacity for love and generosity.

• Lynn Flieger Countryman said she was different because of the way she perceived life. "I am able to see many solutions."

•Doug West said, "I think differently from other people. My thought process is different."

• Herb Schumacher said he was different because he had ideas of his own. He felt his mind was innovative, and he was willing to take a stand on issues. "I am not just a talker, but a doer."

• David Mesple struggled with this issue and was committed to not presenting himself as different. But, he said, "I feel different a lot from others." He felt he had the advantage of accomplishing things, however.

•Carlene Schumacher felt her greatest strength was her creative skills, not her social interaction with people.

5) What kind of people do you like to be around?

All of the artists expressed a desire to share and communicate with people who had interests and were stimulating to be around because of their knowledge, creativity, or ability to express. It was

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concluded these kinds of relationships enhanced and mentally stimulated the artists' own thinking processes. Six artists (60%) mentioned specifically they liked humorous, happy, or "upbeat." people. Humor appeared to be an important factor.

The following are some responses given to this question:

• Doug West said he liked to be around stimulating, happy, and well educated people.

• Rita Derjue said she liked creative people and culturally advanced thinkers. She also preferred talkative people, not silent people.

• Jutta Golas said she liked vibrant, positive, successful, and "upbeat" people.

• Rodger Lang said he liked people who were interested in what they do---creative people and interesting conversations. He said, "Some ideas are easier to talk about with creative people."

• David Mesple said he liked people who had knowledge and information but were genuine and open-minded.

• Doug Fey said he liked to be around people who were interesting and thinking.

• Carlene Schumacher said she liked to be around "motor mouths," people who could shift gears and exchange information.

6) Where do you think best and why?

Various responses were given to this question, but all of the respondents indicated a need to be alone in a comfortable place where they could function without distractions for peace and relaxation. Fifty percent of the artists indicated that a repetitive action such as driving a car, walking, or doing physical labor was necessary to think best. This indicated the artists needed to focus the mind by some sense of rhythm. Three artists (30%) specifically stated they thought best in their own space such as their studios or a particular environment. For example, Don Coen mentioned his home town where he grew up as "my place." Some other responses given were:

• Rodger Lang said he needed to be alone in "an attempt to focus and solve a problem." He said he needed isolation such as driving or physical labor.

• Carlene Schumacher said, "The rhythm of walking moves my mind to another process---changing."

• David Mesple said he thought best when driving a car or doing anything repetitive---"action not requiring direct concentration."

• Doug West said he functioned best in bed before sleep when his mind was freer and "closer to a detached reality" where he could see various angles to problems.

7) Is your art work a product of you and your thinking process?

All of the artists (100%) responded "yes" to this question. However, two artists clarified their responses by stating that, as artists, they were not "all" of the thinking process involved. For example, Jutta Golas said, "Maybe, not solely" because she was influenced by environment and did not invent the clay process she used in her work. She commented that her work was a "renewing of self." Likewise, David Mesple said, "Yes, but that's not all." He stated inspiration was one thing not considered part of the thinking process for him because it was spontaneous and visionary. Mesple said, "My works are physical creations of spontaneous vision and they are all personal and about me."

Other responses to this question included the following:

• Doug Fey said no one else could do what he did. "I make the connections, the physical manipulations of those ideas."

• Rita Derjue said her work was "definitely" a product of her and her thinking process. She said, "It is a very necessary proof to society that I have mastered a particular plan---a proof of my ability to perform in order to be able to go on in my profession."

• Herb Schumacher said his skills and processing were his own. He never had to copy because he always had ideas he could express in his own way, and he never had to look at another's work for inspiration.

• Doug West said, "Creative expression had meaning for one's life. It was the essence of a person and set one's work apart from another. Personal involvement was the spirit and soul of the work."

• Rodger Lang said, "Yes, in every way I can think of. My work is the result of combined intuitions and orderly elements which reflect the things I think about."

8) Do you use your hands to talk or communicate with when holding a conversation? (This question was also in the verbalizing section.)

Refer to page 15, question number two of the "Verbalizing" section for responses to this question.

9) Do you think you are more spatial than most people? (This question was also in the spatial reasoning section.)

Refer to page 14, question number three of the "Spatial Reasoning" section for responses to this question.

Working or Being Alone

The three interview questions in this section were asked for the purpose of determining social habits. Questions number two and three were asked at different times during the interview. Question two was placed 13th in the interview order and question three was placed 22nd. What was interesting to note in regard to the results was the same artists answered "yes" and "no" to both questions, with the exception of two artists who answered "yes" to one question and "no" to the other. This showed the questions were a reliable indicator and brought forth consistent responses.

The questions in this section were as follows:

1) Do you prefer to work in a group or individually?

All of the artists (100%) said they preferred to work individually rather than in a group. The consensus was they preferred to create their own working environment and make decisions for themselves. The following were some responses given to this question:

• David Mesple said, "I like to set the pace and make decisions. Everyone in a group may not be committed to getting stuff done, and they do not help me with the effort---too slow."

• Doug Fey said when he worked alone he did not have to deal with the personal interactions of people.

• Herb Schumacher said his best work was done alone. "A group is art by committee. A real artist has ideas that come from within and is able to manifest that person by the skills that are possessed."

• Doug West said he preferred "without a doubt" to work as an individual. He said, "I know how I want things done. I am a perfectionist and enjoy being solitary. I have more confidence in the end result when I am doing it by myself."

• Carlene Schumacher said she did not need an environment created by others. "I like solitude. The creative process requires it. I cannot complete an idea around others."

• Both Lynn Flieger Countryman and Rodger Lang said they preferred to work individually. However, they both commented on the value of group work. For example, Countryman said, "There are benefits in both." Lang said he worked with groups for task-oriented projects, but preferred to make his own mistakes on an individual level.

2) Do you need to get away from other people for peace?

Ninety percent of the artists said "yes" to this question. One artist (10%) said "no." The majority agreed they needed to limit their time spent with other people in order to deal with the "self." For example, Carlene Schumacher said she needed to renew her energy. She loved people but they were an unnatural expenditure of her energy and she needed to get back into herself for the purpose of making a transition into the creative mode. Likewise, Lynn Flieger Countryman said she needed to get away from other people for peace in order to gather her thoughts. "I need solitude to figure things out alone." She did not want to be interrupted by others who could not see the probem.

On the other hand, David Mesple said "no" because he could "tune people out" and he enjoyed the distraction except for negativity.

Some other responses given were as follows:

• Doug West said, "Yes" to this question because he needed solitary time to regain spiritual sustenance from outdoors---nature.

• Rodger Lang said he needed to be alone most of the time, especially in the mornings.

• Doug Fey said he needed to get away from other people for peace but did not do it often enough. "I feel pressure from others to fit into their world." This was difficult for him.

• Rita Derjue said she hated crowds and noise. She said she "very much" needed to get away from other people for peace. "I like space---mental space."

• Don Coen said, "Yes, sometimes," to this question. He liked to ride his bike---to use physical energy to get away from people for peace.

3) Do you like to be alone at times?

Ninety percent of the artists said "yes" to this question, and 10% said "no." All of the artists agreed they spent time alone and liked it. They relished that time to regroup their thoughts, to concentrate, to do their art work, to reflect, or to feel free. Although Don Coen's response was counted as a "no," it was similar to one other answer given. Coen said, "I am not a loner at all. I spend a lot of time alone painting because it is a solitary business. It does not bother me because I am never really alone. I have the music playing." Similarly, David Mesple said he liked to be alone, but not a lot because he drew comfort from people and felt included in social settings.

Some other responses to this question were as follows:

• Rodger Lang said he liked to be alone several hours a day. "I like silence of my own choosing."

• Doug Fey said, "It gives me a chance to be free---unencumbered."

• Jutta Golis said, "Yes. I do what I want---feel freedom. I do not like my space invaded."

DISCUSSION AND CONCLUSION

Due to the massive amount of data that is generated by an in-depth interview method such as the one used for this project, a smaller sample was necessary in order to digest the information on a reasonable level. It is readily accepted in the research community that a larger sample can allow the investigator to generalize on a more reliable level and that a smaller sample is a limitation of the study. The investigator does not altogether agree with this conclusion. The main objective of this report was to enlist the artist as an authentic resource for the purpose of enlightening the educational field about an individual thinking style. Therefore, a qualitative approach rather than a quantitative one was called for. Behavioral patterns, common areas of agreement, and insightful in-depth explanations became the norm for this project. Conclusions were based on how and why the artist gave a particular response and not just on the response given. The results were a product of triangulation of the data.

The conclusions reached are discussed in the following list:

1. The artists exhibited an egocentric quality. That is to say, they almost always related concepts and ideas to themselves when speaking about examples of their experiences and thinking processes. The words "I" and "my," in regard to ideas or perspectives, were used on a regular basis. The artists' own opinions and how they derived them were important issues to be shared on a constant level of awareness. A deliberate attempt was made to connect the inner-self to other aspects of life---such as the expression of their art skills as a valid way of authenticating their purpose for living and thinking.

2. The artists were very intense, driven, disciplined, and perfectionistic in regard to the creating of art. They structured their lives and attitudes around being able to pursue their creative endeavors. And, learning was a reflection of being able to express art more effectively---a lifestyle.

3. There was a conscious level of awareness in regard to intrinsic versus extrinsic matters. The artists were aware of how outside influences affected them and their thoughts---the kinds of changes that were created from such external forces as music, reading, conversations, friendships, hobbies and so on.

4. Often the artists expressed the fact they were easily distracted and had to force themselves to focus, to concentrate, or to discipline themselves with the use of notes, cards, lists, or conscious effort. However, they expressed a desire for frequent changes of thought because it added to possible solutions for problem solving. New answers or ideas had the possibility of spinning-off a distracting incident.

A story about distractions was told by Don Coen. He said he could be deeply involved in a conversation and at the same time see a weed out of the corner of his eye that needed to be picked and be unable to control himself from pulling the weed while still talking. This diversion was almost relished. It alleviated boredom and a desire or need to express energy or movement in multiple ways and in simutaneous actions.

5. The artists were able to mentally see connections between ideas and concepts

very quickly and to jump or leap from one thing to another and then come back again. They had the ability to imagine changes and consequences in thought. This process was not sequential in nature but rather a mental process that dealt with problem solving as an on-going activity related to their life. Innovation became a means to an end to find an aesthetically pleasing as well as practical solution to a specific problem.

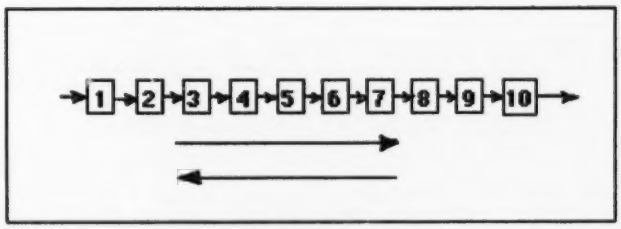

Figure 1
Ten Step Diagram for
Sequential, **Progressive**, **Linear**, or **Logical** Thinking.

The process of leaping and jumping can best be understood in diagram form. Figures 1 and 2 visually represent how sequential, progressive, linear, or logical reasoning may look. Figure 3 visually represents artistic thinking on a two dimensional level, and Figure 4 visually represents artistic thinking in its full three dimensional form. In this spatial reasoning process there is no sequential order or placement of concepts due to logic. The flow of thought is not in step form as in Figures 1 and 2, but rather full-dimensional in nature (see Figures 1, 2, 3, and 4).

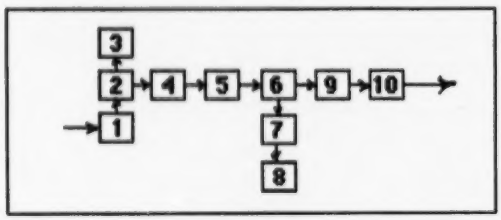

Figure 2
Same as Figure 1 using linear thinking but expressed in building block form---one step or concept builds on another or leads to another---logical sequencing.

6. The investigator encountered a tremendous expression of energy and capacity for joy, humor, and love for living and experiencing life to the fullest, whatever that might have been. The artists appeared to be able to somewhat control the aspect of fear of the unknown in order to learn and experience on an intense level. Animated actions, exaggerated speech, and sometimes extreme hand and body movements were used by the artists to express feelings about their art and life. Not one artist sat still and unemotional while speaking. Dramatic use of language and facial expressions with laughter were part of the communication process. By sharing in this way, they were dealing with the "self" as an essential part of a particular experience.

7. The sequential or logical thinking process was used specifically to focus and to integrate important steps that would allow the artist to reach an end result, or goal, or product---almost like a necessary evil. The purpose of such reasoning was regarded as a method to reach a satisfactory end result such as mastering technique in order to create (e.g., the work of Don Coen's air brush painting, Doug West's silkscreen layering, or Herb Schumacher's clay forming and firing). Logical or sequential reasoning was not viewed as the more powerful or natural way of thinking but rather as another manner in which to solve a problem when this method was needed.

8. The artists appeared to have the ability to compensate for a lack of a particular skill through self-instruction. What they did not know, they taught themselves in order to get on with the process of living and

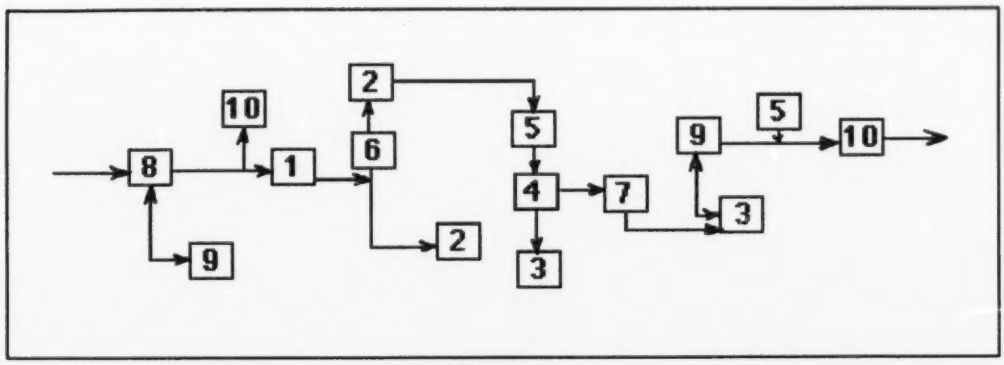

Figure 3

This figure visually represents a two dimensional look at artistic thinking. The process of leaping or jumping from one step to another can only be seen on a partial level in this diagram. Refer to Figure 4 for full visual representation of thinking style.

expressing. Again the objective was to get at an end result and to solve a problem in order to create. The artists enjoyed incorporating new knowledge because it stimulated interest, ideas, and made them better artists.

9. A variety of levels were seen in the artists' abilities to image fluid or flexible mental manipulations of space for the purposes of creating on an explorative level---that is, imagination for imagination's sake. Some artists had a higher level of coping with ambiquities than others. However, they all seemed to have the ability to move space around in their minds in order to think, but some were more fluid and flexible in regard to abstraction than others. They could leave the concrete world and just explore space. Others had to be tied to the practical and leaped into the unknown only with a sense of purpose for achieving a particular end result. But, all of the artists related the mental use of space as a thinking process for the purpose of solving a problem. The ability to cope with ambiquities on an explorative level may have been related to personality traits, upbringing, or general intelligence levels rather than thinking process orientation. For example, being more explorative in the imagination could have been encouraged as a child. More research would need to be done in this area before any conclusive generalizations could be made in regard to this subject (Also, refer to conclusion 10.).

10. The artists appeared to have the ability to see relationships among things---to find patterns that related to the whole and

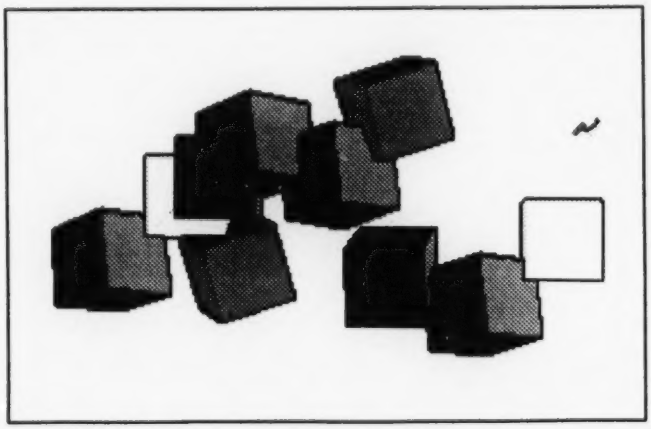

Figure 4

This figure visually represents the artistic thinking process with its three dimensionality and **leaping** or **jumping** characteristic from one step or concept to another. There is no sequential order or placement due to logic. The flow of thought is not in a step form as represented in Figures 1 and 2.

then to create a personal form of reality out of those parts for creative purposes. In a sense, creativity was no more or less than the ability to manipulate spatial imagery in an innovative (personal) way for the purpose of solving a problem. The concept of creating was not limited to preconceived ideas or shapes but rather was unlimited in nature. Spatial was regarded as whole dimensional (with limitless possibilities) and two-dimensional was only one element of the three-dimensional picture. Unlike Finke's (1990) concept of using "preinventive forms" in order to discover and invent, the artists appeared to re-invent and mentally adjust existing forms to explore visual possibilities. The mental space or parts were not just re-arranged, but rather the space was pulled and stretched and actually changed in size and shape---like a mental exploration into the extremes. Some artists were more fluid and flexible at accomplishing this than others, but the findings validated previous theoretical assumptions by the investigator (La Pierre, 1987, 1988a).

11. The artists exhibited a pioneer-like attitude for trying something new. This trait had a pinch of rebellion as an ingredient. To follow was not a goal, but to set a trend was desirable. What appeared to be most important to the artists was living with themselves and how they wished to interpret life on a creative level.

12. The results indicated the artists expressed a need to process information quickly. Their way of processing information (input as well as output) included a holistic and spatial approach to gathering and evaluating data. Their thinking processes jumped around or appeared to be disconnected. However, they could see an image quicker because it was not slowed by the logic of the spoken word.

13. The responses showed the majority of artists felt working and being alone enriched their abilities to create by feeding their own energy levels. Retreating into their self-imposed mental space was needed in order to act on their thinking---in order to produce as artists. Being around other people seemed to disturb their ability to think or concentrate clearly at times. Although the artists recognized a need for socialization, either through school learning or when working with other people, they preferred to work individually instead of in a group. Solving a problem was a personal task and working in a group slowed the resolution process.

14. Let me expand the traditional reporting method by making some personal comments on gender issues and how this might have affected the thinking process of the women artists as compared to the men artists. I was unable to reach any conclusions. Although this was not a concern of this study, I did sense a feeling of "female sensibility" from the women artists. Though implicit, I was conscious of a difference in feelings between the two sexes. The women appeared to express a strong awareness of the fact they were female on a conscious level.

A growing body of evidence in the arts (Art Education, 1992) indicated women have indeed actualized art differently in their lives due to family obligations, cultural expectations, or educational emphasis. Not that the concern to express art may have been any less compelling for a woman than for a man, but rather the recognition by society of the female artist has been a struggle for the individual on many levels, personal as well as professional.

TOWARD AN UNDERSTANDING OF THE NATURE OF ARTISTIC INTELLIGENCE

A need exists in education to

understand and to support the individuality expressed by the artist. Each of us possesses in himself/ herself a uniqueness that is not duplicated in another. In theory this is accepted, but in practice what exactly does this imply in terms of the learning environment? To express one's uniqueness in a concrete manner may be a necessary ingredient for the learning process in general, as well as for the arts. To make a concrete object may allow an individual to mentally grow with self-confidence and to be knowledgeable of how to foster his or her own thinking style as a learning process . Maybe this is what can be learned from the professional artist: how he or she manages and structures the thinking process to produce artistically with an intense level of committment that can be objectified.

Here let me break from traditional reporting form again to define the characteristics of the "individual" thinker and the "group" thinker as two distinct entities. I suggest that the philosophical nature of each type of thinker is different and at times conflicts with the other.

The "individual" thinker can be characterized as (a) changeable or flexible in thinking style (described by Walker [1991] as "fluid"), (b) having spiritual strength in his or her own thoughts, (c) having a willingness to move forward with risk because it feels appropriate even though it may be contrary to accepted norms, (d) having motivation based on self progress and purpose, (e) having quickness and spontaneity and sometimes impetuous in nature, (f) having more concern for product than process and the discipline that it takes to achieve technical success, and (g) having a need for personal privacy and aloneness.

On the other hand, the "group" thinker can be characterized as (a) more conforming; (b) more traditional in nature; (c) having the philosophy of equality for the good of the whole because all input is important and not screened; (d) having a reputation for being slower in process because it requires more time to make decisions and, therefore, may at times be inept; (e) requiring more verbalization and linear progression in order for all participants to understand the process because the activities belong to all involved; and (f) lacking leadership at times because individuals find it more difficult to consciously step out of line and to take charge being contrary to the philosophy of the group concept.

The results of this study showed the individual can add to the group with creative insights and inspirations that are expressive of their personal visions and thoughts developed through active work. This can add strength to the group because the individuals that make up a group are more likely to explore, to brain storm, and to problem solve for the best solution as opposed to just adhering to conformity or tradition.

In light of the Discussion and Conclusion Section and the findings of this study, it seems appropriate that the individual artistic thinker should be involved in formulating standards for the assessment of the thinking process because they use it and understand it on a day-to-day basis. It is very difficult to quantify this kind of thinking process due to its unique qualities. However, establishing criteria for such behavior might lead to a better understanding of the process as a whole. The problem with formulating such criteria is that one runs the risk of mis-categorizing a particular individual's style or thought process because there is always an exception to the rule. So to say if one has all of some particular characteristics he or she will be designated as an artistic thinker, might not be the case in reality because behavior can

be imitated and learned.

Perhaps one of the best ways of appraising artistic thinking is through individual interview method such as presented in this study. It is necessary to evaluate responses in various categories where questions are grouped and then to examine the individual's art work as a longitudinal study. To follow the thinking pattern over a long period of time, together with the development of a particular artistic style (as expressed in concrete art form), can expose a consistency of mental behavior. Thus, the examination of continuity and the created patterns of an individual's life can produce a more honest assessment about this thinking style. This is not to say that artistic thinking cannot be tested or at some point determined in another way. But, it is to say that artistic thinking is basically expressed in the actions of creating a product over an extended period of time to establish a unique avenue of expression (mastery-level) reflective of mental thought. Therefore, I suggest the professional artist's thinking style is achieved through constant and consistent work and rework of an idiosyncratic approach or philosophy of living that shares some characteristics and ways of approaching issues with other artists.

A one-time test may not represent a true evaluation of the artistic thought process in all cases and may not be a valid predictive method. The patterns of behavior in regard to artistic intelligence may be spatial in nature (a thinking style preference) that is expanded and developed purposely over time as a way to survive and cope in a society where linear, sequential type thinking predominates. Because society is not accepting of people with noticeable differences, artists may have tended to hide their unique thinking patterns in order to socialize and appear "normal." So, to look to a product and the productivity of an artist's overall life may be the only reliable indicator of true artistic intelligence.

In conclusion, this project was very revealing and stimulating for me. Each interview left me excited and wanting to work as an artist at my own craft of sculpting. The interviews were provocative because I was able to relate to these artists by speaking my own language---the language of creating. This research project enhanced my life. I no longer feel alone. There are others like me who are struggling to make sense of the world by recreating it in form. However, more research is needed to clarify spatial reasoning issues in regard to ethnicity as well as gender. These topics were not the concern of this particular project and thus were not explored.

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